JEFFREY T. OSTERHOUT

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EDUCATION

University of California-Los Angeles (UCLA) 2021
Ph.D., Geochemistry
Dissertation title: *Studies of Precambrian microfossils and the search for ancient biosignatures on Earth and Mars*

University of Cincinnati 2016
M.S., Geology

University of Oregon 2012–2013
Post-Bac., Geological Sciences

Oregon State University 2011
B.S., General Science
Minor: Chemistry

PROFESSIONAL EXPERIENCE

NASA Jet Propulsion Laboratory (JPL), California Institute of Technology
Postdoctoral Fellow, Mars Sample Return Program 2022–present

UCLA Department of Earth, Planetary, and Space Sciences, Center for the Study of Evolution and the Origin of Life (CSEOL) 2016–2021
Graduate Student Researcher, Graduate Teaching Assistant

University of Cincinnati, Department of Geology 2014–2016
Graduate Teaching Assistant

AREAS OF SPECIALIZATION

Planetary geoscience
Precambrian paleobiology
Stable isotope geochemistry
Organic geochemistry
Geomicrobiology
Astrobiology

PUBLICATIONS

Czaja, A.D., **Osterhout, J.T.**, Williford, K.H. and Valley, J.W. (In prep). Stable isotope geochemistry of a late Archean microbial ecosystem: Diversity in the pre-GOE oceans. To be submitted to *Precambrian Research*.

Osterhout, J.T., Schopf, J.W., Kudryavtsev, A.B., Czaja, A.D. and Williford, K.H. (Under review). Deep-UV Raman spectroscopy of carbonaceous Precambrian microfossils: Insights into the search for past life on Mars. *Astrobiology*.

Osterhout, J.T., Schopf, J.W., Williford, K.H., McKeegan, K.D., Kudryavtsev, A.B. and Liu, M.-C. (**2021**). Carbon isotopes of Proterozoic filamentous microfossils: SIMS analyses of ancient cyanobacteria from two disparate shallow-marine cherts. *Geomicrobiology Journal*, 1–13.

Osterhout, J.T., Czaja, A.D., Bartley, J.K. and Fralick, P.W. (**2019**). Preservation of carbon isotopes in kerogen from thermally altered Mesoproterozoic lacustrine microbialites. *Canadian Journal of Earth Sciences*, *56*(10), 1017–1026.

Schopf, J.W., Kudryavtsev, A.B., **Osterhout, J.T.**, Williford, K.H., Kitajima, K., Valley, J.W. and Sugitani, K. (**2017**). An anaerobic ~3400 Ma shallow-water microbial consortium: Presumptive evidence of Earth's Paleoarchean anoxic atmosphere. *Precambrian Research*, *299*, 309–318.

Czaja, A.D., Beukes, N.J. and **Osterhout, J.T.** (**2016**). Sulfur-oxidizing bacteria prior to the Great Oxidation Event from the 2.52 Ga Gamohaan Formation of South Africa. *Geology*, *44*(12), 983–986.

Retallack, G.J., Gose, B.N. and **Osterhout, J.T.** (**2015**). Periglacial paleosols and Cryogenian paleoclimate near Adelaide, South Australia. *Precambrian Research*, *263*, 1–18.

Retallack, G.J., Marconato, A., **Osterhout, J.T.**, Watts, K.E. and Bindeman, I.N. (**2014**). Revised Wonoka isotopic anomaly in South Australia and Late Ediacaran mass extinction. *Journal of the Geological Society, London*, *171*, 709–722.

ORAL PRESENTATIONS

Geological Society of America (GSA) Annual Meeting (virtual) 2020

Osterhout, J.T., Schopf, J.W., Kudryavtsev, A.B., and McKeegan, K.D. Thermal alteration of Precambrian microfossils: Applications to the study of stable carbon isotopes on the early Earth. In *GSA Connects Online*.

Geological Society of America (GSA) Annual Meeting 2017

Osterhout, J.T. and Czaja, A.D. Stable isotope geochemistry of a late Archean microbial ecosystem: Diversity in the pre-GOE oceans. In *GSA Abstracts with Programs*, Vol. 49, No. 6.

Awarded best student presentation – GSA Geobiology & Geomicrobiology Division

Astrobiology Graduate Conference 2016

Osterhout, J.T. and Czaja, A.D. Carbon isotopic biosignatures in Precambrian organics: Unraveling the record of ancient microbial metabolisms.

Geological Society of America (GSA) Annual Meeting 2015

Osterhout, J.T., Czaja, A.D. and Beukes, N.J. Carbon isotope evidence of photoautotrophy in an open marine ecosystem preceding the GOE. In *GSA Abstracts with Programs*, Vol. 47, No. 7.

Midwest Geobiology Conference 2015

Osterhout, J.T., Czaja, A.D. and Fralick, P.W. Organic geochemistry of stromatolites in a 1.4-billion-year-old evaporitic lacustrine ecosystem.

Astrobiology Science Conference 2015

Osterhout, J.T., Czaja, A.D. and Beukes, N.J. Morphological and geochemical diversity of deep water microfossils from the 2.52-Ga-old Gamohaan Formation, South Africa. Abstract #7632.

Astrobiology Graduate Conference 2014

Osterhout, J.T., Retallack, G.J. and Gose, B.N. Stable isotopes of periglacial paleosols from South Australia and consequences for the Cryogenian Snowball Earth.

Oregon Academy of Sciences 2014

Osterhout, J.T. and Retallack, G.J. Stable isotopes of Ediacaran paleosols from South Australia and implications for the Shuram-Wonoka anomaly. *Oregon Academy of Sciences Proceedings*, Vol. 73, pp. 32-33.

POSTER PRESENTATIONS

Geological Society of America (GSA) Annual Meeting 2018

Osterhout, J.T., Williford, K.H. and Schopf, J.W. SIMS carbon isotope analyses of filamentous organic-walled microfossils permineralized in Proterozoic cherts. In *GSA Abstracts with Programs* Vol. 50, No. 6.

Astrobiology Graduate Conference 2018

Osterhout, J.T. and Schopf, J.W. Exploration of Raman and carbon isotopic biosignatures on early Earth and Mars.

Biosignature Preservation and Detection in Mars Analog Environments 2016

Osterhout, J.T., Czaja, A.D. and Fralick, P.W. Organic geochemistry of a 1.4-billion-year-old evaporitic lake: Insights for the Mars 2020 SHERLOC instrument. Abstract #2068.

COAUTHORED CONFERENCE PRESENTATIONS

2nd International Mars Sample Return Conference 2018

Czaja, A.D., **Osterhout, J.T.** and Gangidine, A.J. Mineralogical control of organic matter thermal alteration: Implications for biosignature preservation in returned martian samples.

American Geophysical Union (AGU) Fall Meeting 2018

Czaja, A.D., Gangidine, A., Lorber, K.N. and **Osterhout, J.T**. Diagenesis of organic microfossils and their mineral matrices: Implications for biosignature preservation on Earth and Mars.

Geological Society of America (GSA) Annual Meeting 2016

Paton, T., Howard, L., **Osterhout, J.T.**, Havig, J. and Huff, W. Mineralogy and geochemistry of hot spring deposits in Yellowstone National Park. In *GSA Abstracts with Programs* Vol. 48, No. 7.

Geological Society of America (GSA) Annual Meeting 2015

Czaja, A.D., **Osterhout, J.T.** and Beukes, N.J. Exceptionally large Neoarchean spheroidal microfossils from South Africa: possible contributors to the GOE. In *GSA Abstracts with Programs* Vol. 47, No. 7.

Midwest Geobiology Conference 2015

Czaja, A.D., **Osterhout, J.T.** and Beukes, N.J. Fossil evidence of possible contributors to the Great Oxidation Event: Exceptionally large Neoarchean microfossils from South Africa.

NASA Astrobiology Science Conference 2015

Czaja, A.D., **Osterhout, J.T.** and Beukes, N.J. Large planktonic microfossils preserved in a deep water facies of the 2.52-Ga-old Gamohaan Formation, South Africa.

RESEARCH AWARDS & FUNDING

American Philosophical Society ($5,000) 2019

Lewis & Clark Fund for Exploration and Field Research in Astrobiology

Sigma Xi, The Scientific Research Honor Society ($1,000) 2018

National Grants-in-Aid of Research (GIAR) Award

Sigma Xi, University of Cincinnati Chapter ($3,000) 2016

Grants-in-Aid of Research (GIAR) Award

Department of Geology, University of Cincinnati ($3,000) 2016

Kenneth E. Caster Award (for research in paleobiology)

NASA Astrobiology Institute ($5,000) 2015

Early Career Collaboration Award

Geological Society of America ($2,500) 2015

Graduate Student Research Grant

Graduate Student Governance Association (GSGA) ($1,120) 2015

Research Fellowship, University of Cincinnati

TEACHING

Graduate Teaching Assistant, UCLA Dept. of Earth, Planetary, & Space Sciences

EPSS 16 – Major Events in the History of Life (w/ lab) 2016–2021

EPSS 16 – Major Events in the History of Life (**online** w/ lab)

EPSS 17 – Dinosaurs and Their Relatives (w/ lab)

EPSS M118 – Advanced Paleontology

Awarded 2019 UCLA EPSS Distinguished Student Teaching Award

Graduate Teaching Assistant, UC Dept. of Geology 2014–2016

GEOL 1003 – Physical Geology (w/ lab)
GEOL 1004 – Historical Geology
GEOL 1013 – Earthquakes and Society
GEOL 1016 – Astrobiology
GEOL 1061 – Oceanography

AD HOC MANUSCRIPT REVIEWS

Organic Geochemistry (1)
Precambrian Research (1)
Biogeosciences (1)

FIELD EXPERIENCE

Santander, Spain; NASA International Astrobiology Summer School: *From Astrochemistry to the Origin of Life* 2019
Carpinteria Salt Marsh Reserve, Santa Barabara, CA; Geomicrobiology of salt marsh sediments 2017
Ontario, Canada, Gunflint Fm., Rossport Fm.; Precambrian paleontology 2015
Pacific Northwest, Mt. Hood (OR), Mt. Adams (WA); Geomicrobiology of alpine glaciers 2015
Yellowstone National Park; Geomicrobiology of hot springs 2015
San Salvador Island, The Bahamas; Carbonate sedimentology 2015

SERVICE & OUTREACH

UCLA EPSS Graduate Representative (Undergraduate, Faculty) 2019–2021
Planetary Science and Astrobiology Decadal Survey 2020
UCLA Explore Your Universe (EYU) Annual Outreach Event 2017–2020
President, Graduate Geology Club, UC Department of Geology 2015–2016
UC Earth Science Outreach Program 2015–2016
Graduate Student Governance Association (GSGA) Representative, UC Department of Geology 2014–2015

PROFESSIONAL ORGANIZATIONS

Geochemical Society 2019–present
Sigma Gamma Epsilon, National Honor Society for Earth Sciences 2019–present
Sigma Xi, The Scientific Research Honor Society 2016–present
Paleontological Society 2015–present
Geological Society of America (GSA) 2014–present
American Institute of Professional Geologists (AIPG) 2015–2021